

CONSTANT VOLUME, SINGLE ZONE, UNITARY (PACKAGED AND SPLIT) AIR CONDITIONER AND HEAT PUMP SYSTEMS

CEC-NRCA-MCH-03-A (Revised 01/19)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF ACCEPTANCE		NRCA-MCH-03-A
Constant Volume, Single Zone, Unitary (Packaged and Split) Air Conditioner and Heat Pump Systems		(Page 1 of 5)
Project Name:	Enforcement Agency:	Permit Number:
Project Address:	City:	Zip Code:
System Name or Identification/Tag:	System Location or Area Served:	

Compliance Results: AUTOMATED ("Complies" or "Does Not Comply")	Enforcement Agency Use: Checked by/Date
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Intent:	Submit one Certificate of Acceptance for each room, area, or zone that is directly or indirectly served by a thermostatic controls system. Includes construction inspection for an optional economizer that has been certified to the Energy Commission.
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A. Construction Inspection			
Building:	Floor:	Room/Area/Zone:	Control/System:
Prior to Functional Testing, verify and document all of the following			
1.	Required Documentation (check all of the following):		
<input type="checkbox"/>	a.	NRCC-MCH-03-A as approved by the authority having jurisdiction is available for reference.	
<input type="checkbox"/>	b.	<p>A printed copy of the OpenADR 2.0a or OpenADR 2.0b Virtual End Node (VEN) certificate for the demand response control system (§110.12(a)1A); OR</p> <p>A certificate from the manufacturer stating that the demand response control system is capable of responding to a demand response signal from a certified OpenADR 2.0b Virtual End Node by automatically implementing the control functions requested by the Virtual End Node for the equipment it controls. (§110.12(a)1B)</p> <p>Note: Demand responsive controls may incorporate and use protocols in addition to (not instead of) the protocols listed above. (§110.12(a)3)</p>	
2.	Thermostatic controls for each zone served by the system (check one of the following):		
<input type="checkbox"/>	a.	Thermostat is located within the space-conditioning zone that is served by the HVAC system (NA 7.5.2.1(a) , §120.2(a)).	
<input type="checkbox"/>	b.	An Energy Management Control system is installed to comply with the requirement of one or more thermostatic controls. (§120.2(a))	
<input type="checkbox"/>	c.	An independent perimeter heating or cooling system that serve more than one zone without individual thermostatic controls is installed (check all of the following): (Exception to §120.2(a))	
<input type="checkbox"/>	i.	All zones served by the perimeter system are also served by an interior cooling system; and	
<input type="checkbox"/>	ii.	The perimeter system is designed solely to offset envelope heat losses or gains; and	
<input type="checkbox"/>	iii.	The perimeter system has at least one thermostatic control for each building orientation of 50 feet or more; and	
<input type="checkbox"/>	iv.	The perimeter system is controlled by at least one thermostat located in one of the zones served by the system.	
3.	Criteria for Thermostatic zone controls (check all of the following):		
<input type="checkbox"/>	a.	Set Points and Dead-band (check one of the following):	
<input type="checkbox"/>	i.	The thermostatic control is used to control comfort heating only and is capable of being set, locally or remotely, down to 55°F or lower. (§120.2(b)1)	
<input type="checkbox"/>	ii.	The thermostatic control is used to control comfort cooling only and is capable of being set, locally or remotely, up to 85°F or higher. (§120.2(b)2)	
<input type="checkbox"/>	iii.	The thermostatic control is used to control both comfort heating and comfort cooling and requires manual changeover between heating and cooling modes. (Exception to §120.2(b)3)	
<input type="checkbox"/>	iv.	The thermostatic control is used to control both comfort heating and comfort cooling and does NOT require manual changeover between heating and cooling modes and is capable of all of the following: (§120.2(b)3)	
<input type="checkbox"/>	A	A minimum heating setpoint of 55°F or lower; and	
<input type="checkbox"/>	B	A maximum cooling setpoint of 85°F or higher; and	
<input type="checkbox"/>	C	A temperature range or dead band of at least 5°F within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum.	
<input type="checkbox"/>	b.	ADDITIONAL THERMOSTATIC CONTROLS (check one of the following):	
<input type="checkbox"/>	i.	The heating or cooling systems is NOT a heat pump system and is NOT controlled by an Energy Management Control System, and has a clock mechanism that allows the building occupant to program the temperature setpoints for at least four periods within 24 hours (a setback thermostat). (§120.2(b)4 , §110.2(c)1)	
<input type="checkbox"/>	ii.	<p>Thermostatic control NOT required.</p> <p>The heating or cooling system is NOT a heat pump system and is NOT controlled by an Energy Management Control System, and is one of the following (check one of the following): (Exception to §110.2(c))</p>	
<input type="checkbox"/>	A	Gravity gas wall heater	

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A. Construction Inspection			
Building:	Floor:	Room/Area/Zone:	Control/System:
Prior to Functional Testing, verify and document all of the following			
<input type="checkbox"/>	B	Gravity floor heater	
<input type="checkbox"/>	C	Gravity room heater	
<input type="checkbox"/>	D	Non-central electric heater, fireplace or decorative gas appliance, wood stove, room air conditioner, or room air-conditioner heat pump.	
<input type="checkbox"/>	iii	The heating or cooling system is a heat pump with supplementary electric resistance heaters and has all of the following controls (check all of the following):	
<input type="checkbox"/>	A	The cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating. (§110.2(b)2)	
<input type="checkbox"/>	B	Verify that supplementary heater operation is prevented when the heating load can be met by the heat pump alone (§110.2(b)1), UNLESS the thermostatic controls provide preferential rate control, intelligent recovery, staging, ramping or another control mechanism designed to preclude the unnecessary operation of supplementary heating; supplementary heater operation is limited the following conditions: <ul style="list-style-type: none"> Defrost Transient Periods (i.e., start-ups or following thermostat setpoint advance) (Exception to §110.2(b)1)	
4.	Placeholder (DEMAND RESPONSIVE CONTROLS & DEMAND RESPONSIVE ZONAL HVAC CONTROLS)		
<input type="checkbox"/>	a.	Verify that the demand responsive controls are capable of communicating using one or more of the following for communications that occur within the building: Wi-Fi, ZigBee, BACnet, Ethernet, or hard-wiring. (§110.12(a)2)	
<input type="checkbox"/>	b.	Verify that when the demand responsive control communications are disabled or unavailable, all demand responsive controls shall continue to perform all other control functions provided by the control. (§110.12(a)4)	
<input type="checkbox"/>	c.	Verify that the demand response control system has been certified to the Energy Commission as meeting all of the requirements in Joint Appendix 5 (Occupant Controlled Smart Thermostat). (§110.12(a)5) http://www.energy.ca.gov/title24/equipment_cert/ocst/index.html	
<input type="checkbox"/>	d.	Verify that the controls are programmed to provide an adjustable rate of change for the temperature setup increase, decrease, and reset. (§110.12(b)4)	
<input type="checkbox"/>	e.	Verify that the controls have the following features: (§110.12(b)5)	
<input type="checkbox"/>	i.	Disabled. Disabled by authorized facility operators; and (§110.12(a)5A)	
<input type="checkbox"/>	ii.	Manual control. Manual control by authorized facility operators to allow adjustment of heating and cooling set points globally from a single point in the EMCS. (§110.12(a)5B)	
5.	OCCUPANCY AND PRE-OCCUPANCY PROGRAMMING (check all of the following)		
<input type="checkbox"/>	a.	Occupied, unoccupied, and holiday schedules have been programmed per the schedule provided. (NA7.5.2.1(c))	
<input type="checkbox"/>	b.	Pre-occupancy purge has been programmed for the 1-hour period immediately before the building is normally occupied to provide ventilation by (check one of the following). (NA7.5.2.1(d) , §120.1(d)2)	
<input type="checkbox"/>	i	The minimum CFM specified by design for the heating or cooling unit; reference NRCC-MCH-03-E "required ventilation air flow" column 14 for the unit specified in "zone/system/VAV box tag" column 1. (§120.1(d)2)	
<input type="checkbox"/>	ii	Three complete air changes to the zone served by the heating or cooling unit as specified by design; reference NRCC-MCH-03-E "required ventilation air flow" column 14 for the unit specified in "zone/system/VAV box tag" column 1. (§120.2(d)2)	
6.	If an economizer is installed that is certified to the Energy Commission (check all of the following): (NA7.5.4.1)		
<input type="checkbox"/>	a.	Verify that the economizer has been certified to the Energy Commission at the Energy Commission website: http://www.energy.ca.gov/title24/equipment_cert/ae/index.html	
<input type="checkbox"/>	b.	Economizer damper moves freely without binding. (NA7.5.4.1(f))	
<input type="checkbox"/>	c.	Unitary systems with an economizer have control systems, including two-stage or electronic thermostats, that cycle compressors off when economizers can provide partial cooling (NA7.5.4.1(g))	
<input type="checkbox"/>	d.	System has return fan speed control, relief dampers, or dedicated relief fans to prevent building over pressurization in full economizer mode. (NA7.5.4.1(i))	
<input type="checkbox"/>	e.	For systems with DDC controls, sensor used for economizer lockout has been factory or field calibrated. (NA7.5.4.1(j))	
<input type="checkbox"/>	f.	For systems with non-DDC controls, manufacturer's startup and testing procedures have been applied. (NA7.5.4.1(k))	

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B. Functional Testing														
Building:		Floor:		Room/Area:		Control/System:								
Step 1: Disable economizer control and demand-controlled ventilation (if applicable) to prevent unexpected interactions. (NA7.5.2.2 Step 1)														
<i>Occupied Mode</i>														
Step 2: Heating load during occupied condition (NA7.5.2.2 Step 2)														
Step 3: No-load during occupied condition (NA7.5.2.2 Step 3)														
Step 4: Cooling load during occupied condition (NA7.5.2.2 Step 4)														
<i>Unoccupied Mode</i>														
Step 5: No-load during unoccupied condition (NA7.5.2.2 Step 5)														
Step 6: Heating load during unoccupied condition (NA7.5.2.2 Step 6)														
Step 7: Cooling load during unoccupied condition (NA7.5.2.2 Step 7)														
Step 8: Manual override (NA7.5.2.2 Step 8)														
As each test applies, enter in the box either Pass (P) , Fail (F) , or Does Not Apply (X)								8	7	6	5	4	3	2
a.	Supply fan operates continually (NA7.5.2.2 Step 2(a), Step 3(e), Step 4(h))													
b.	Supply fan turns off (NA7.5.2.2 Step 5(l))													
c.	Supply fan cycles on and off (NA7.5.2.2 Step 6(o), Step 7(s))													
d.	System reverts to "occupied" mode to satisfy any condition (NA7.5.2.2 Step 8(w))													
e.	System turns off when manual override time period expires (NA7.5.2.2 Step 8(x))													
f.	Gas-fired furnace, heat pump, or electric heater stages on (NA7.5.2.2 Step 2(b), Step 6(p))													
g.	No heating is provided by the unit (NA7.5.2.2 Step 3(f), Step 4(j), Step 5(n), Step 7(u))													
h.	No cooling is provided by the unit (NA7.5.2.2 Step 2(c), Step 3(f), Step 5(n), Step 6(q))													
i.	Compressor stages on (NA7.5.2.2 Step 4(i), Step 7(t))													
j.	Outside air damper is open to minimum position (NA7.5.2.2 Step 2(d), Step 3(g), Step 4(k), Step 7(v))													
k.	Outside air damper closes completely (NA7.5.2.2 Step 5(n), Step 6(r))													
Step 9: Functional Testing Results (NA7.5.2.2 Step 9)								Enter: P/F/X						
Step 10: System returned to initial operating conditions after all tests have been completed.														
Functional Test Compliance Results: AUTOMATED ("Complies" or "Does Not Comply")														

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT		
1. I certify that this Certificate of Acceptance documentation is accurate and complete.		
Documentation Author Name:	Documentation Author Signature:	
Documentation Author Company Name:	Date Signed:	
Address:	ATT Certification Identification (If applicable):	
City/State/Zip:	Phone:	
FIELD TECHNICIAN'S DECLARATION STATEMENT		
I certify the following under penalty of perjury, under the laws of the State of California:		
<ol style="list-style-type: none"> The information provided on this Certificate of Acceptance is true and correct. I am the person who performed the acceptance verification reported on this Certificate of Acceptance (Field Technician). The construction or installation identified on this Certificate of Acceptance complies with the applicable acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and signed by the responsible builder/installer and has been posted or made available with the building permit(s) issued for the building. 		
Field Technician Name:	Field Technician Signature:	
Field Technician Company Name:	Position with Company (Title):	
Address:	ATT Certification Identification (if applicable):	
City/State/Zip:	Phone:	Date Signed:
RESPONSIBLE PERSON'S DECLARATION STATEMENT		
I certify the following under penalty of perjury, under the laws of the State of California:		
<ol style="list-style-type: none"> I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this Certificate of Acceptance. I am eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Acceptance and attest to the declarations in this statement (responsible acceptance person). The information provided on this Certificate of Acceptance substantiates that the construction or installation identified on this Certificate of Acceptance complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and is posted or made available with the building permit(s) issued for the building. I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy. 		
Responsible Acceptance Person Name:	Responsible Acceptance Person Signature:	
Responsible Acceptance Person Company Name:	Position with Company (Title):	
Address:	CSLB License:	